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10/563,302	01/04/2006	Toshiki Kobayashi	1113.45730X00	8395

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EXAMINER	
MAI, TIEN HUNG	
ART UNIT	PAPER NUMBER
2836	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/563,302	KOBAYASHI ET AL.	
	Examiner	Art Unit	
	TIEN MAI	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *31-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/26/2009 has been entered. Upon entering amendment, claims 31-48 have been amended; claim objections have been withdrawn.

Claim Objections

2. Claims 31-36; please change “a rectangular substrate” in line 9, respectively, to “the rectangular substrate”.

3. Claim 37; please change “a rectangular substrate” in line 11 to “the rectangular substrate”.

4. Claims 43-48; please change “a rectangular substrate” in line 7 and 10, respectively, to “the rectangular substrate”.

Response to Arguments

5. Applicant's arguments filed 06/26/2009 have been fully considered but they are not persuasive for the reasons discussed below.

6. Applicant argues that Machida does not teach the substrate is being rectangular. The Examiner respectfully disagrees because Machida illustrates the substrate (6) in

fig. 6 is being rectangular. Please note that none of the drawing of current application shows the rectangular substrate except side view of substrate (G) (cross-section view) as shown in figs. 1 and 2; therefore, Machida's substrate (element 6 in fig. 6) reads the claim limitation.

7. Applicant also argues that nothing in Machida suggests that figs. 15(d) and 15(e) are cross-section. The Examiner respectfully disagrees because a cross-section is defined as a cutting or a piece of something cut off at right angles to an axis. The axis here is understood as X, Y and Z. The obtained shape of the object depends on cross-sectional spatial orientation, i.e., horizontal or vertical. Accordingly, Machida illustrates in figs. 15(d) and 15(e) cross-section obtained with horizontal cut through.

8. For the reasons discussed above, the rejection is maintained.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 31, 32, 34, 35, 43, 44, 46 and 47 are rejected under 35 U.S.C. 102(b) as being anticipated by Machida (US 4,848,536, “Machida”).

11. **Regarding claims 31 and 32**, Machida discloses apparatus for transporting an electrically conductive wafer, the apparatus comprising: a plurality of rod-like electrodes (1-1 through 1-5) having shorter sides and longer sides (see reproduced figure below)

and oriented along an electrostatic chuck in parallel to a substrate mounting surface (see fig. 6), wherein shorter sides of each of said rod-like electrodes are oriented toward outside the electrostatic chuck, and longer sides of each of the rod-like electrodes are parallel to longer sides of adjacent rod-like electrodes, wherein the substrate mounting surface and the rod-like electrodes are configured so that, when a rectangular substrate (element 6 in fig. 6) is mounted on the substrate mounting surface, the rod-like electrodes will be disposed along an edge portion of the rectangular substrate to be treated so that one of said shorter sides of each of said rod-like electrodes extends in parallel to a longer side of said rectangular substrate (see fig. 6), and wherein said rod-like electrodes are configured to be connected to wiring so that said electrostatic chuck will be bi-pole type (see fig. 11).

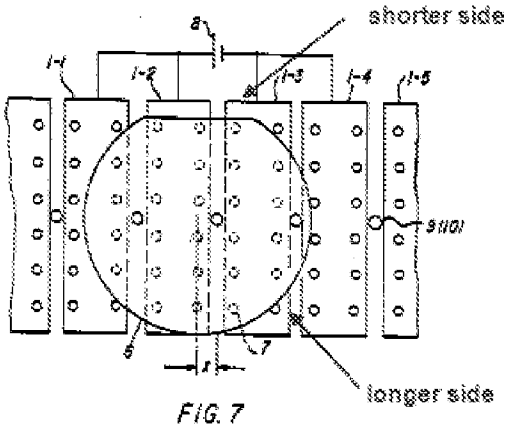

FIG. 7

12. **Regarding claim 34**, Machida discloses apparatus for transporting an electrically conductive wafer, the apparatus comprising: a plurality of rod-like electrodes (1-1 through 1-5) having shorter sides and longer sides (see reproduced figure above) and oriented along an electrostatic chuck in parallel to a substrate mounting surface (see fig. 6), wherein shorter sides of each of said rod-like electrodes are oriented toward outside

the electrostatic chuck, and longer sides of each of the rod-like electrodes are parallel to longer sides of adjacent rod-like electrodes, wherein the substrate mounting surface and the rod-like electrodes are configured so that, when a rectangular substrate (element 6 in fig. 6) is mounted on the substrate mounting surface, the rod-like electrodes will be disposed along an edge portion of the rectangular substrate to be treated so that one of said shorter sides of each of said rod-like electrodes extends in parallel to a longer side of said rectangular substrate (see fig. 6), wherein the rod-like electrodes are comprised of rod-like base material (51) (see fig. 13), wherein cross-sections of said rod-like base materials are in stepped shapes (see fig. 15e), and wherein said rod-like electrodes are arranged with a predetermined gap between adjacent rod-like electrodes (see figs. 7 and 11).

13. **Regarding claim 35**, Machida discloses apparatus for transporting an electrically conductive wafer, the apparatus comprising: a plurality of rod-like electrodes (1-1 through 1-5) having shorter sides and longer sides (see reproduced figure above) and oriented along an electrostatic chuck in parallel to a substrate mounting surface (see fig. 6), wherein shorter sides of each of said rod-like electrodes are oriented toward outside the electrostatic chuck, and longer sides of each of the rod-like electrodes are parallel to longer sides of adjacent rod-like electrodes, wherein the substrate mounting surface and the rod-like electrodes are configured so that, when a rectangular substrate (element 6 in fig. 6) is mounted on the substrate mounting surface, the rod-like electrodes will be disposed along an edge portion of the rectangular substrate to be treated so that one of said shorter sides of each of said rod-like electrodes extends in

parallel to a longer side of said rectangular substrate (see fig. 6), wherein the rod-like electrodes are comprised of rod-like base material (51) (see fig. 13), and cross-sections of said rod-like base materials are arranged like roofing tiles (see fig. 15d), each having a curved convex portion on one side and a curved concave portion on the other side, and wherein each of said convex portions is arranged with predetermined gap (please note that figs. 15a-15e do not show a gap between the electrodes however in closed-up view, there is a gap between two electrodes as shown in fig. 7) between said convex portion and said concave portion of an adjacent rod-like electrode.

14. **Regarding claims 43 and 44**, Machida discloses apparatus for transporting an electrically conductive wafer, the apparatus comprising: a plurality of rod-like electrodes (1-1 through 1-5) having shorter sides and longer sides (see reproduced figure above) and oriented along an rectangular substrate stage (see fig. 7), wherein shorter sides of each of said rod-like electrodes are oriented toward outside the rectangular substrate stage, and longer sides of each of the rod-like electrodes are parallel to longer sides of adjacent rod-like electrodes, and a rectangular substrate (element 6 in fig. 6) is subjected to be electrostatically attracted by the plurality of rod-like electrodes (col. 3, line 67 – col. 4, line 2), wherein the rectangular substrate stage and the rod-like electrodes are configured so that when the rectangular substrate is mounted on the rectangular substrate stage, the rod-like electrode will be disposed along an edge portion of the rectangular substrate to be treated so that one of the shorter sides of each of said rod-like electrodes extends in parallel to a longer side of said rectangular

substrate (see fig. 6), and wherein said rod-like electrodes are configured to be connected to wiring so that said rod-like electrode will be bi-pole type (see fig. 11).

15. **Regarding claim 46**, Machida discloses apparatus for transporting an electrically conductive wafer, the apparatus comprising: a plurality of rod-like electrodes (1-1 through 1-5) having shorter sides and longer sides (see reproduced figure above) and oriented along an rectangular substrate stage (see fig. 7), wherein shorter sides of each of said rod-like electrodes are oriented toward outside the rectangular substrate stage, and longer sides of each of the rod-like electrodes are parallel to longer sides of adjacent rod-like electrodes, and a rectangular substrate (element 6 in fig. 6) is subjected to be electrostatically attracted by the plurality of rod-like electrodes (col. 3, line 67 – col. 4, line 2), wherein the rectangular substrate stage and the rod-like electrodes are configured so that when the rectangular substrate is mounted on the rectangular substrate stage, the rod-like electrode will be disposed along an edge portion of the rectangular substrate to be treated so that one of the shorter sides of each of said rod-like electrodes extends in parallel to a longer side of said rectangular substrate (see fig. 6), wherein said rod-like electrodes are comprised of rod-like base materials (51) (see fig. 13), wherein cross-sections of said rod-like base materials are in stepped shapes (see fig. 15e), and wherein said rod-like electrodes are arranged with a predetermined gap between adjacent rod-like electrodes (see figs. 7 and 11).

16. **Regarding claim 47**, Machida discloses apparatus for transporting an electrically conductive wafer, the apparatus comprising: a plurality of rod-like electrodes (1-1 through 1-5) having shorter sides and longer sides (see reproduced figure above) and

oriented along an rectangular substrate stage (see fig. 7), wherein shorter sides of each of said rod-like electrodes are oriented toward outside the rectangular substrate stage, and longer sides of each of the rod-like electrodes are parallel to longer sides of adjacent rod-like electrodes, and a rectangular substrate (element 6 in fig. 6) is subjected to be electrostatically attracted by the plurality of rod-like electrodes (col. 3, line 67 – col. 4, line 2), wherein the rectangular substrate stage and the rod-like electrodes are configured so that when the rectangular substrate is mounted on the rectangular substrate stage, the rod-like electrode will be disposed along an edge portion of the rectangular substrate to be treated so that one of the shorter sides of each of said rod-like electrodes extends in parallel to a longer side of said rectangular substrate (see fig. 6), wherein said rod-like electrodes are comprised of rod-like base materials (51) (see fig. 13), wherein cross-sections of said rod-like base materials are arranged like roofing tiles (see fig. 15d), each having a curved convex portion on one side and a curved concave portion on the other side, and wherein each of said convex portions is arranged with predetermined gap (please note that figs. 15a-15e do not show a gap between the electrodes however in closed-up view, there is a gap between two electrodes as shown in fig. 7) between said convex portion and said concave portion of an adjacent rod-like electrode.

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

18. Claims 33, 37-41 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Machida in view of Motoaki (JP 62211363, "Motoaki").

19. **Regarding claim 33**, Machida discloses apparatus for transporting an electrically conductive wafer, the apparatus comprising: a plurality of rod-like electrodes (1-1 through 1-5) having shorter sides and longer sides (see reproduced figure above) and oriented along an electrostatic chuck in parallel to a substrate mounting surface (see fig. 6), wherein shorter sides of each of said rod-like electrodes are oriented toward outside the electrostatic chuck, and longer sides of each of the rod-like electrodes are parallel to longer sides of adjacent rod-like electrodes, wherein the substrate mounting surface and the rod-like electrodes are configured so that, when a rectangular substrate (element 6 in fig. 6) is mounted on the substrate mounting surface, the rod-like electrodes will be disposed along an edge portion of the rectangular substrate to be treated so that one of said shorter sides of each of said rod-like electrodes extends in parallel to a longer side of said rectangular substrate (see fig. 6), wherein the rod-like electrodes are comprised of rod-like base material (51) (see fig. 13). Machida does not explicitly disclose thermally sprayed films including high-purity ceramics are formed on said rod-like base material. Motoaki discloses thermally sprayed films (32) including high-purity ceramics (metallic powder of Ti) are formed on an electrode (11). Motoaki teaches that ceramic coating layer provides excellent adhesive powder and corrosion resistance for base material (abstract). It would have been obvious to one of ordinary

skill in the art at the time of the invention was made to spray a ceramic material onto a base surface to provide a corrosion resistant base surface to protect the base material (abstract).

20. **Regarding claim 37**, Machida discloses apparatus for transporting an electrically conductive wafer, the apparatus comprising: a plurality of rod-like electrodes (1-1 through 1-5) having shorter sides and longer sides (see reproduced figure above) and oriented along an electrostatic chuck in parallel to a substrate mounting surface (see fig. 6), wherein shorter sides of each of said rod-like electrodes are oriented toward outside the electrostatic chuck, and longer sides of each of the rod-like electrodes are parallel to longer sides of adjacent rod-like electrodes, wherein the substrate mounting surface and the rod-like electrodes are configured so that, when a rectangular substrate (element 6 in fig. 6) is mounted on the substrate mounting surface, the rod-like electrodes will be disposed so that one of said shorter sides of each of said rod-like electrodes extends in parallel to a longer side of said rectangular substrate (see fig. 6), wherein the rod-like electrodes are comprised of rod-like base material (51) (see fig. 13). Machida does not explicitly disclose thermally sprayed films including high-purity ceramic that is formed on said rod-like base material. Motoaki discloses thermally sprayed films (32) including high-purity ceramics (metallic powder of Ti) are formed on an electrode (11). Motoaki teaches that ceramic coating layer provides excellent adhesive powder and corrosion resistance for base material (abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to

spray a ceramic material onto a base surface to provide a corrosion resistant base surface to protect the base material (abstract).

21. **Regarding claim 38**, Machida discloses cross-sections of said base materials are in rectangular shapes (see fig. 7).

22. **Regarding claim 39**, Machida discloses cross-sections of said base materials are in rectangular shapes with wider widths than lengths (elements 1-1 through 1-4 in fig. 6).

23. **Regarding claim 40**, Machida discloses cross-section of said base materials are in stepped shapes (see figs. 13 and 15e).

24. **Regarding claim 41**, Machida discloses cross-sections of said base materials are arranged like roofing tiles having a curved convex portion on one side and a curved concave portion on the other side (see fig. 15d).

25. **Regarding claim 45**, Machida discloses apparatus for transporting an electrically conductive wafer, the apparatus comprising: a plurality of rod-like electrodes (1-1 through 1-5) having shorter sides and longer sides (see reproduced figure above) and oriented along an rectangular substrate stage (see fig. 7), wherein shorter sides of each of said rod-like electrodes are oriented toward outside the rectangular substrate stage, and longer sides of each of the rod-like electrodes are parallel to longer sides of adjacent rod-like electrodes, and a rectangular substrate (element 6 in fig. 6) is subjected to be electrostatically attracted by the plurality of rod-like electrodes (col. 3, line 67 – col. 4, line 2), wherein the rectangular substrate stage and the rod-like electrodes are configured so that when the rectangular substrate is mounted on the

rectangular substrate stage, the rod-like electrode will be disposed along an edge portion of the rectangular substrate to be treated so that one of the shorter sides of each of said rod-like electrodes extends in parallel to a longer side of said rectangular substrate (see fig. 6), wherein the rod-like electrodes are comprised of rod-like base material (51) (see fig. 13). Machida does not explicitly disclose thermally sprayed films including high-purity ceramic that is formed on said rod-like base material. Motoaki discloses thermally sprayed films (32) including high-purity ceramics (metallic powder of Ti) are formed on an electrode (11). Motoaki teaches that ceramic coating layer provides excellent adhesive powder and corrosion resistance for base material (abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to spray a ceramic material onto a base surface to provide a corrosion resistant base surface to protect the base material (abstract).

26. Claims 36 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Machida in view of Hiramatsu et al. (US 2003/0044653, “Hiramatsu”).

27. **Regarding claim 36**, Machida discloses apparatus for transporting an electrically conductive wafer, the apparatus comprising: a plurality of rod-like electrodes (1-1 through 1-5) having shorter sides and longer sides (see reproduced figure above) and oriented along an electrostatic chuck in parallel to a substrate mounting surface (see fig. 6), wherein shorter sides of each of said rod-like electrodes are oriented toward outside the electrostatic chuck, and longer sides of each of the rod-like electrodes are parallel to longer sides of adjacent rod-like electrodes, wherein the substrate mounting surface

and the rod-like electrodes are configured so that, when a rectangular substrate (element 6 in fig. 6) is mounted on the substrate mounting surface, the rod-like electrodes will be disposed along an edge portion of the rectangular substrate to be treated so that one of said shorter sides of each of said rod-like electrodes extends in parallel to a longer side of said rectangular substrate (see fig. 6), wherein the rod-like electrodes are comprised of rod-like base material (51) (see fig. 13). Machida does not explicitly disclose the rod-like base materials include high-purity isotropic graphite. Hiramatsu teaches that an isotropic graphite material formed in a form disc to provide low thermal expansion ([0500]). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to choose material having low thermal expansion, such as isotropic graphite to limit the expansion of the chuck so that the ceramic coating does not crack.

28. **Regarding claim 48**, Machida discloses apparatus for transporting an electrically conductive wafer, the apparatus comprising: a plurality of rod-like electrodes (1-1 through 1-5) having shorter sides and longer sides (see reproduced figure above) and oriented along an rectangular substrate stage (see fig. 7), wherein shorter sides of each of said rod-like electrodes are oriented toward outside the rectangular substrate stage, and longer sides of each of the rod-like electrodes are parallel to longer sides of adjacent rod-like electrodes, and a rectangular substrate (element 6 in fig. 6) is subjected to be electrostatically attracted by the plurality of rod-like electrodes (col. 3, line 67 – col. 4, line 2), wherein the rectangular substrate stage and the rod-like electrodes are configured so that when the rectangular substrate is mounted on the

rectangular substrate stage, the rod-like electrode will be disposed along an edge portion of the rectangular substrate to be treated so that one of the shorter sides of each of said rod-like electrodes extends in parallel to a longer side of said rectangular substrate (see fig. 6), wherein said rod-like electrodes are comprised of rod-like base materials (51) (see fig. 13). Machida does not explicitly disclose the rod-like base materials include high-purity isotropic graphite. Hiramatsu teaches that an isotropic graphite material formed in a form disc to provide low thermal expansion ([0500]). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to choose material having low thermal expansion, such as isotropic graphite to limit the expansion of the chuck so that the ceramic coating does not crack.

29. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Machida in view of Motoaki, and further in view of Hiramatsu.

30. **Regarding claim 42**, Machida and Motoaki disclose the limitations as discussed above. Neither Machida nor Motoaki discloses the base materials are comprised of high-purity isotropic graphite. Hiramatsu discloses that an isotropic graphite material formed in a form disc to provide low thermal expansion ([0500]). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to choose material having low thermal expansion, such as isotropic graphite to limit the expansion of the chuck so that the ceramic coating does not crack.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIEN MAI whose telephone number is 571-270-1277. The examiner can normally be reached on M-Th: 8:00-7:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rexford Barnie can be reached on 571-272-7492. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Tien Mai/
Examiner, Art Unit 2836

7-1-09

/Stephen W Jackson/
Primary Examiner, Art Unit 2836